portions along a thus formed seal line. A self-expanding cylindrical stent-like support component was coated on at least its inside surface with a heat-activated adhesive. The seamed liner was inserted into the stent-like support component, and the liner was inflated until the two non-seamed portions of the liner and the radially extending portions of the seamed portion of the liner engaged the inner surface of the support component. Then, this assembly with the inflated liner was placed into an oven to activate the adhesive whereby, upon subsequent cooling, the seamed liner was secured to the support component to form a branched trunk component as shown in FIGS. 31 and 32. In this example, the inflation of the liner was carried out by packing the seamed liner with salt crystals so the liner stretches in place and until adhesion between the liner and the support component had occurred.

EXAMPLE VIII

A branched trunk component is prepared as described in Example VII, except the liner inflation is carried out by expanding balloon activity, and the seam is formed by suturing. Because the branched trunk component will elongate when collapsed for entry into the delivery tool, the suturing allows for longitudinal expansion and contraction back down to the as-manufactured seam length. Such suturing is achieved by using a zig-zag stitch pattern.

EXAMPLE IX

Another branched trunk component is made as described in Example VIII, except the liner inflation is carried out by a mandrel, and the sutured seam is formed with a polyurethane compliant suture material.

It will be understood that the embodiments of the present invention which have been described are illustrative of some of the applications of the principles of the present invention. Various modifications may be made by those skilled in the art without departing from the true spirit and scope of the invention.

I claim:

1. A multiple-component branched expandable supportive endoluminal graft comprising:

a plurality of expandable supportive endoluminal components which are deployed individually at a selected location within a body vessel, each said supportive endoluminal graft component being radially compressible for endoluminal insertion and radially expandable for deployment at a desired location within a body vessel;

one of said expandable supportive endoluminal components is a trunk component, said trunk component including a tubular supporting member and a trunk liner positioned along said tubular supporting member, said trunk liner having a generally cylindrical upper body portion, at least two leg portions, and a generally cylindrical lower body portion, each said leg portion defining a leg opening into said upper body portion and another leg opening into said lower body portion;

at least one other of said expandable supportive endoluminal components is a generally cylindrical supportive leg component; and

said generally cylindrical supportive leg component and one of said leg portions of the trunk component, when said leg component and trunk component are deployed within the body vessel, are telescopically positioned with respect to each other.

2. The supportive endoluminal graft in accordance with claim 1, wherein said generally cylindrical supportive leg component has an end portion which, when deployed, is positioned within one said leg opening of the trunk component.

3. The supportive endoluminal graft in accordance with claim 1, wherein said plurality of expandable supportive endoluminal components are self-expanding.

4. The supportive endoluminal graft in accordance with claim 1, wherein said plurality of expandable supportive endoluminal components are deployed by a radially expandable device.

5. The supportive endoluminal graft in accordance with claim 1, wherein said generally cylindrical supportive component includes a generally cylindrical supporting member and a generally cylindrical liner secured therealong.

6. The supportive endoluminal graft in accordance with claim 1, wherein said trunk liner is a stretchable wall of essentially inert biocompatible material, said stretchable wall being attached to a portion of the internal surface of the trunk component tubular supporting member, said stretchable wall having a diameter size that expands with said trunk component tubular supporting member.

7. The supportive endoluminal graft in accordance with claim 5, wherein said liner of the generally cylindrical supportive leg component is a stretchable wall of essentially inert biocompatible material, said stretchable wall being applied onto at least the internal surface of the generally cylindrical tubular supporting member of the leg component.

8. The supportive endoluminal graft in accordance with claim 1, wherein said at least two leg portions of the trunk liner are partially defined by a longitudinal seam which extends generally between said generally cylindrical upper and lower body portions of the trunk liner.

9. The supportive endoluminal graft in accordance with claim 8, wherein said leg portions are further defined by portions of the trunk liner which are secured to the tubular supporting member at a location spaced radially from said longitudinal seam.

10. The supportive endoluminal graft in accordance with claim 1, wherein said leg portions of the trunk liner are longitudinally generally coextensive with a central longitudinal portion of said tubular supporting member of the trunk component.

11. The supportive endoluminal graft in accordance with claim 10, wherein an outside section of each of said leg portions of the trunk liner is secured to said tubular supporting member, while inside sections of each of said leg portions are secured to each other along an internal seam.

12. The supportive endoluminal graft in accordance with claim 1, wherein said generally cylindrical supportive leg component, when deployed, is telescopically slidably positioned within one of said leg portions of the trunk component.

13. The supportive endoluminal graft in accordance with claim 5, wherein said liner of the leg component and said trunk liner are each a stretchable wall made from a porous elastomeric material that provides a structure which allows normal cellular invasion thereinto from the body vessel when implanted therewithin.

14. The supportive endoluminal graft in accordance with claim 13, wherein said porous elastomeric material of each stretchable wall is an elastomeric polymer.

15. The supportive endoluminal graft in accordance with claim 13, wherein said porous elastomeric material of said stretchable wall is a polycarbonate urethane.

16. The supportive endoluminal graft in accordance with claim 13, wherein said porous elastomeric material is coated with a thin layer of silicone rubber.

17. The supportive endoluminal graft in accordance with claim 5, wherein said trunk liner and said liner of the leg component are each a stretchable wall along the internal surface and the external surface of each tubular supporting component.

18. The supportive endoluminal graft in accordance with claim 1, wherein an exposed longitudinal end of said tubular supporting member extends longitudinally beyond and is not completely covered by said liner.

19. The supportive endoluminal graft in accordance with claim 1, wherein said tubular supporting component includes a plurality of wire strands with open areas therebetween.

20. The supportive endoluminal graft in accordance with claim 19, wherein said wire strands of the tubular supporting component are generally sinusoidally configured wire that is helically wound into the tubular supporting component, said wire defining therebetween said open areas of the tubular supporting component.

21. The supportive endoluminal graft in accordance with claim 19, wherein said wire strands of the tubular supporting component are shaped as intersecting elongated lengths integral with each other and defining said openings therebetween to form a mesh-shaped tubular supporting component.

22. The supportive endoluminal graft in accordance with claim 1, wherein said trunk component includes a projecting securement member.

23. A multiple-component branching expandable supportive endoluminal graft comprising:

a plurality of expandable supportive endoluminal graft components which are deployed individually at a selected location within a body vessel, each said supportive endoluminal graft component being radially compressible and radially expansible;

one of said expandable supportive endoluminal graft components being a trunk component having a longitudinal axis, an internal liner including a seam disposed generally along the longitudinal axis, and an external surface which is generally cylindrical and spaced outwardly from said internal liner, said trunk component having a plurality of legs defined in part by said seam, said trunk component further having two generally cylindrical body portions which flank said seam and which extend in opposite directions from said legs;

at least one other of said expandable supportive endoluminal graft components being a generally cylindrical supportive leg component;

said trunk component liner being a stretchable wall of essentially inert biocompatible material, said stretchable wall being applied onto an internal surface of a tubular supporting component; and

each said leg is sized and shaped to receive said generally cylindrical supportive leg component.

24. The branching graft according to claim 23, wherein said trunk component has a network of land areas with open areas defined therebetween.

25. A method for making a multi-component bifurcating expandable supportive endoluminal graft, comprising the steps of:

providing a generally tubular self-supporting member;

providing a generally cylindrical liner made of flexible material, and flattening said liner so opposing surfaces engage each other;

forming a longitudinal seam within the thus flattened liner in order to secure opposing longitudinal portions of the liner to each other;

inserting the thus seamed liner within the generally tubular self-supporting member;

inflating the seamed liner while within the self-supporting member until radially extending surfaces of the liner engage an inner surface of the tubular self-support member; and

securing said liner radially extending surfaces onto the thus engaged inner surface of the tubular self-supporting member in order to thereby assemble a branched trunk component.

26. The method of claim 25 further including providing a further expandable supportive endoluminal graft component by providing a generally cylindrical supportive leg compo-

nent which is sized to be telescopically assembled with one of the leg portions of the branched trunk component.

27. The method of claim 25, wherein said inflating step includes filling the seamed liner with elutable materials.

28. The method in accordance with claim 25, wherein said inflating step includes inserting an expandable elongated tool into the seamed liner and expanding same so as to dilate the seamed liner into engagement with the self-supporting member.

29. The method in accordance with claim 25, wherein said step of forming a longitudinal seam includes applying heat along the longitudinal seam location.

30. The method in accordance with claim 25, wherein said step of forming a longitudinal seam includes suturing.

* * * * *

31. A method for manufacturing a multi-lumen tubular supporting component for an endoluminal graft, comprising the steps of:

forming a tubular support component; and

crimping at least one longitudinal portion of said tubular supporting component to form at least one longitudinally disposed indent therein to provide a multiple-lumen portion of said tubular supportive component.

32. The method of claim 31 wherein one longitudinally disposed indent is formed to provide a double lumen portion of said tubular supportive component.

33. The method of claim 31 wherein two parallel, longitudinally disposed, not diametrically opposed, indents are formed to provide a triple lumen portion of said tubular supportive component.

34. The method of claim 31 wherein two longitudinally disposed, diametrically opposed, indents are formed to provide a double lumen portion of said tubular supportive component.

35. The method of claim 31 wherein three longitudinally disposed indents are formed to provide a quadruple lumen portion of said tubular supportive component.

36. A multi-component branching expandable supportive endoluminal graft comprising:

a plurality of expandable supportive endoluminal components adapted to be individually deployed at a selected location within a body vessel, each said supportive endoluminal graft component being radially compressible for endoluminal insertion and radially expandable for deployment at a desired location within a body vessel;

one of said expandable supportive endoluminal components is a trunk component, said trunk component being generally tubular and having a first trunk portion with a given diameter and a second trunk portion including two diametrically opposed,

longitudinally disposed, indents generally defining two parallel, supportive lumens, each with a diameter less than said given diameter;

a trunk liner disposed within said trunk component, said trunk liner having a generally cylindrical body portion and two leg liner portions, each said leg liner portion defining a leg opening, wherein each of said leg liner portions is disposed within respective parallel, supportive lumens of said trunk component, and the generally cylindrical body portion of said liner is disposed within a non-indented portion of said generally cylindrical trunk component; and

at least one other of said expandable supportive endoluminal components is a supportive leg component;

wherein an end portion of said supportive leg component, when said supportive leg component and said trunk component are deployed within the body vessel, is positioned within a leg opening of said liner.

37. The supportive endoluminal graft of claim 36, wherein said end portion of said supportive leg component, when deployed, is telescopically positioned within one of said parallel supportive lumens of the trunk component.

38. The supportive endoluminal graft of claim 36 or claim 37, wherein said plurality of expandable supportive endoluminal components are self-expanding.

39. The supportive endoluminal graft of claim 36 or 37, wherein said liner portions are attached to one another along a line between said diametrically opposed indents.

40. A multi-component bifurcating expandable supportive endoluminal graft comprising:

a plurality of expandable supportive endoluminal components adapted to be individually deployed at a selected location within a body vessel, each said supportive endoluminal graft component being radially compressible for endoluminal insertion and radially expandable for deployment at a desired location within a body vessel;

one of said expandable supportive endoluminal components is a trunk component, said trunk component generally surrounding a trunk liner positioned within said trunk component, said trunk liner having a generally cylindrical body portion and

two leg portions, each said leg portion defining a leg opening, wherein the generally cylindrical body portion of said liner and portions of said leg portions abut said tubular supporting member and are secured to said tubular supporting member, and portions of said leg portions not abutting said tubular supporting member abut one another and are secured to one another;

at least one other of said expandable supportive endoluminal components is a generally cylindrical supportive leg component; and

said generally cylindrical supportive leg component and one of said leg portions of said liner, when said leg component and trunk component are deployed within the body vessel, are telescopically positioned with respect to each other.

41. The supportive endoluminal graft of claim 40, wherein said generally cylindrical supportive leg component has an end portion which, when deployed, is positioned within a said leg opening of the trunk liner.

42. The supportive endoluminal graft of claim 40 or claim 41, wherein said plurality of expandable supportive endoluminal components are self-expanding.

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